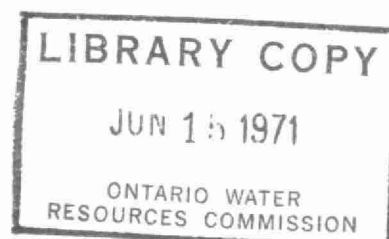


1970

**OPERATING
SUMMARY**

PARRY SOUND

water pollution control plant



LABORATORY LIBRARY
ONTARIO WATER RESOURCES COMMISSION

ONTARIO WATER RESOURCES COMMISSION

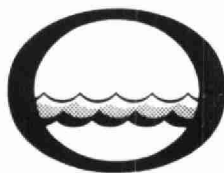
Division of Plant Operations

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca



Water management in Ontario

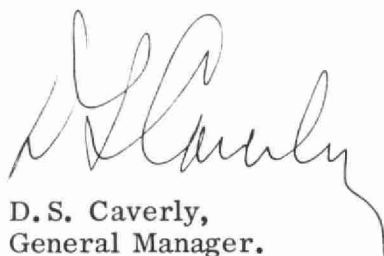
Ontario
Water Resources
Commission

135 St. Clair Ave. W.
Toronto 195
Ontario


Once again we have the privilege of submitting to you our latest detailed report on financial progress and technical activity at your water pollution control plant.

The statistical information contained in this annual operating summary will undoubtedly be a useful barometer of efficiency. Of particular interest will be the comments and recommendations of the regional operations engineer, who was intimately connected with day-to-day operation throughout 1970.

Together with the extensive cost data provided, this information should assist greatly in your general understanding of the problems met and dealt with, and in furnishing a yardstick for possible future expansion.



D. S. Caverly,
General Manager.



D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

CONTENTS

Title page.	1
Flow diagram	2
Design data	3
'70 Review	4
Project costs	6
Process data	9

ONTARIO WATER RESOURCES COMMISSION

CHAIRMAN
D. J. Collins

VICE-CHAIRMAN
J. H. H. Root, M. P. P.

COMMISSIONERS
H. E. Brown
F. S. Hollingsworth
Dr. C. A. Martin
D. A. Moodie
L. E. Venchiarutti

GENERAL MANAGER
D. S. Caverly

ASSISTANT GENERAL MANAGERS
K. H. Sharpe
F. A. Voegel
A. K. Watt

COMMISSION SECRETARY
W. S. MacDonnell

DIVISION OF PLANT OPERATIONS

Director
D. A. McTavish

Assistant Director
C. W. Perry

Regional Supervisor
P. J. Osmond

Operations Engineer
R. Kauppinen

135 St. Clair Avenue West
Toronto 195

PARRY SOUND
water pollution control plant

operated for

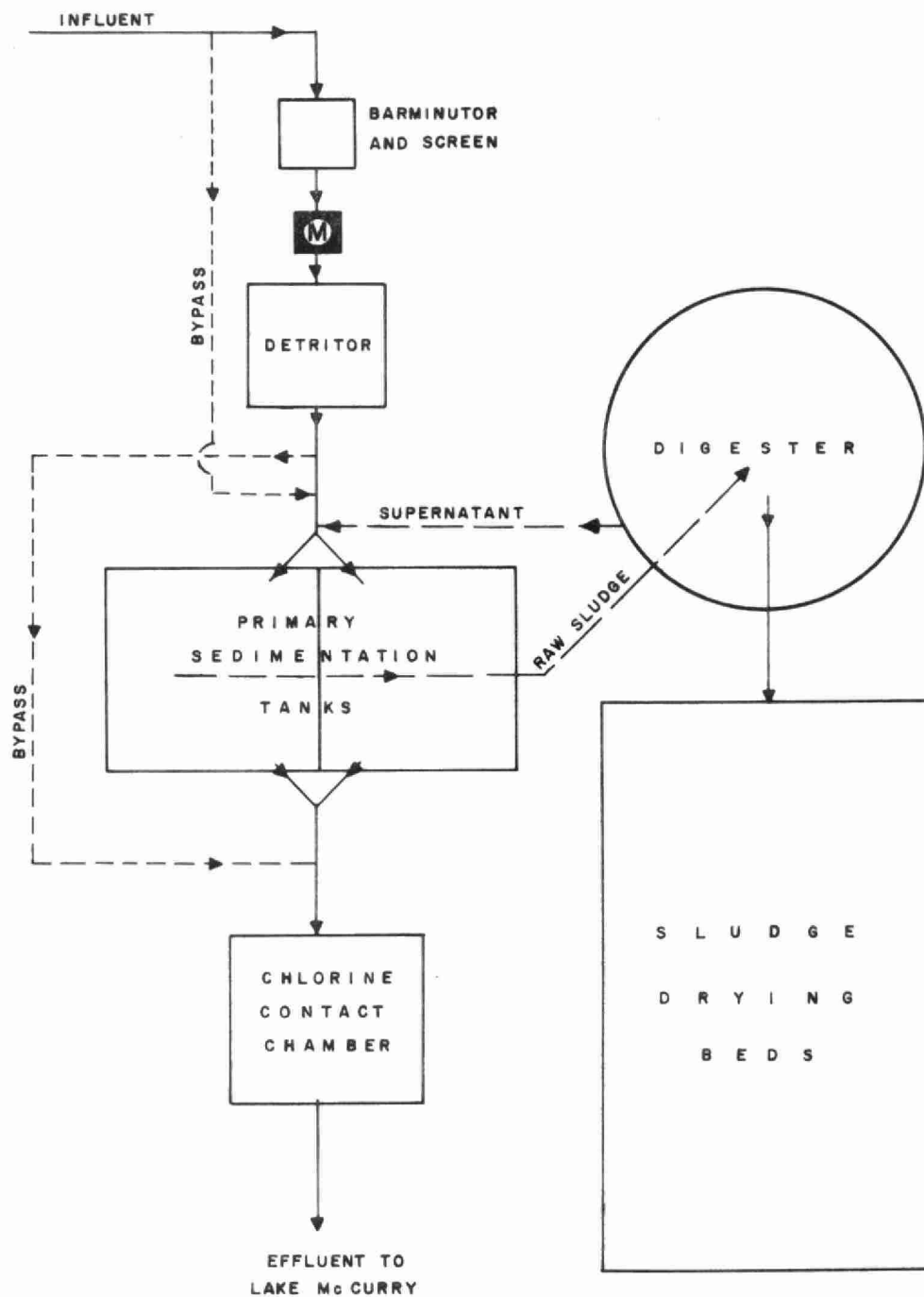
THE TOWN OF PARRY SOUND

by the

ONTARIO WATER RESOURCES COMMISSION

1970 ANNUAL OPERATING SUMMARY

PARRY SOUND
WATER POLLUTION CONTROL PLANT



DESIGN DATA

PROJECT NO.	2-0113-62	TREATMENT	Primary
DESIGN FLOW	0.83 mgd	DESIGN POPULATION	7,500
BOD - Raw Sewage - Removal	250 mg/l 35%	SS - Raw Sewage - Removal	200 mg/l 35%

PRIMARY TREATMENT

Comminution

Type: Barminutor
Size: One Model C (18")

Grit Removal

Type: Dorr Detritor
Size: One 10 X 10 X 1 $\frac{1}{4}$ '
Retention: 1.35 min

Primary Sedimentation

Type: Dorr
Size: Two 30' x 30' x 10' swd
(112,000 gallons)
Retention: 3.24 hr
Loading: Surface, 460 gal/ft²/day
Weir, 3700 gal/ft/day

CHLORINATION

Type: W & T, Type A-731
Size: One 200 lb/day

Chlorine Contact Chamber

Size: One 25 $\frac{1}{2}$ X 8 $\frac{1}{2}$ X 8'
(11,150 gal)
Retention: 19.2 min

OUTFALL

- to McCurry Lake

SLUDGE HANDLING

Digestion System - single-stage

Type: Dorr draft tubes (2)
Size: One 35' dia x 20' 9" swd
(20,580 cu ft or 138,000 gal)

Loading: 0.85 lb/cu ft/mo

Drying Beds

- Four 76 $\frac{1}{2}$ X 29'

PUMPING STATIONS

#2 Ejector Station

Type: Smith & Loveless
Size: One 100 gpm @ 135' tdh

#1 Pumping Station

Type: Flygt
Size: Two 40 gpm @ 26' tdh

#7 Pumping Station (Bay St.)

Type: Flygt
Size: One 40 gpm @ 35' tdh

#3 Pumping Station (Hawthorn Cr.)

Type: Flygt
Size: One 50 gpm

#4 Pumping Station (William St.)

Type: Flygt
Size: Two 250 gpm @ 36' tdh

#5 Pumping Station (Cascade St.)

Type: Robert Morse (Weinman)
Size: Two 420 gpm @ 41' tdh

#6 Pumping Station

Type: Robert Morse
Size: Two 860 gpm @ 150' tdh

'70 REVIEW

FLOWS	DAILY FLOW mil gal	OCCURRING IN THE MONTH OF	MONTHLY FLOW mil gal	OCCURRING IN THE MONTH OF
Average	0.71	—	252 (est)	—
High	2.25	April	25.15	May
Low	0.35	February	13.34	February

GENERAL

The project comprises a primary treatment plant with a design capacity of 830,000 gallons a day, and nine sewage lift stations (two of these Town-owned). The project is staffed by two men.

The plant effluent discharges eventually to Georgian Bay, via McCurry Lake and McCurry Creek. At times odour and foam problems have occurred in the creek and chemicals have been used in an attempt to control these problems.

A consulting engineer was engaged during the year to make a study and to prepare a report on the future requirements for the Town.

EXPENDITURES

The total operating cost for the year was \$37,883.25. The cost per million gallons treated was \$146.18 in 1970 compared to \$162.39 in 1968 and \$126.66 in 1969.

PLANT FLOWS and CHLORINATION

The average daily flow for the year was 710,000 gallons per day and the average design flow of 830,000 gallons per day was exceeded approximately 20 percent of the time. The plant has a maximum hydraulic capability of 2.5 mgd, however treatment efficiency at this flow rate is seriously impaired.

The plant effluent was chlorinated throughout the year and a total of 20,740 pounds of chlorine was used at an average dosage of 8.2 mg/l.

PLANT EFFICIENCY

The raw sewage had an average concentration of 124 mg/l BOD and 173 mg/l suspended solids. The final effluent had an average concentration of 57 mg/l BOD and 34 mg/l suspended solids. This indicated reductions of 55% in BOD and 80% in suspended solids, which is satisfactory for a primary treatment plant.

A total of 979 cubic feet of grit was removed for an average of 3.8 cubic feet per million gallons treated compared to 4.7 in 1969. This relatively high level of grit removed still indicates that a high volume storm water and/or infiltration is gaining access to the collection system.

SLUDGE DIGESTION and DISPOSAL

A total of 194,800 gallons of raw sludge was pumped to the digester and 81,500 gallons of digested sludge was removed from the digester to the drying beds. A total of 70.9 cubic yards of dried sludge was removed from the beds.

The raw sludge had an average concentration of 5.4% total solids of which 56% was volatile matter. The digested sludge had an average concentration of 8.0% total solids of which 42% was volatile matter. The reduction in volatile matter was satisfactory.

CONCLUSIONS

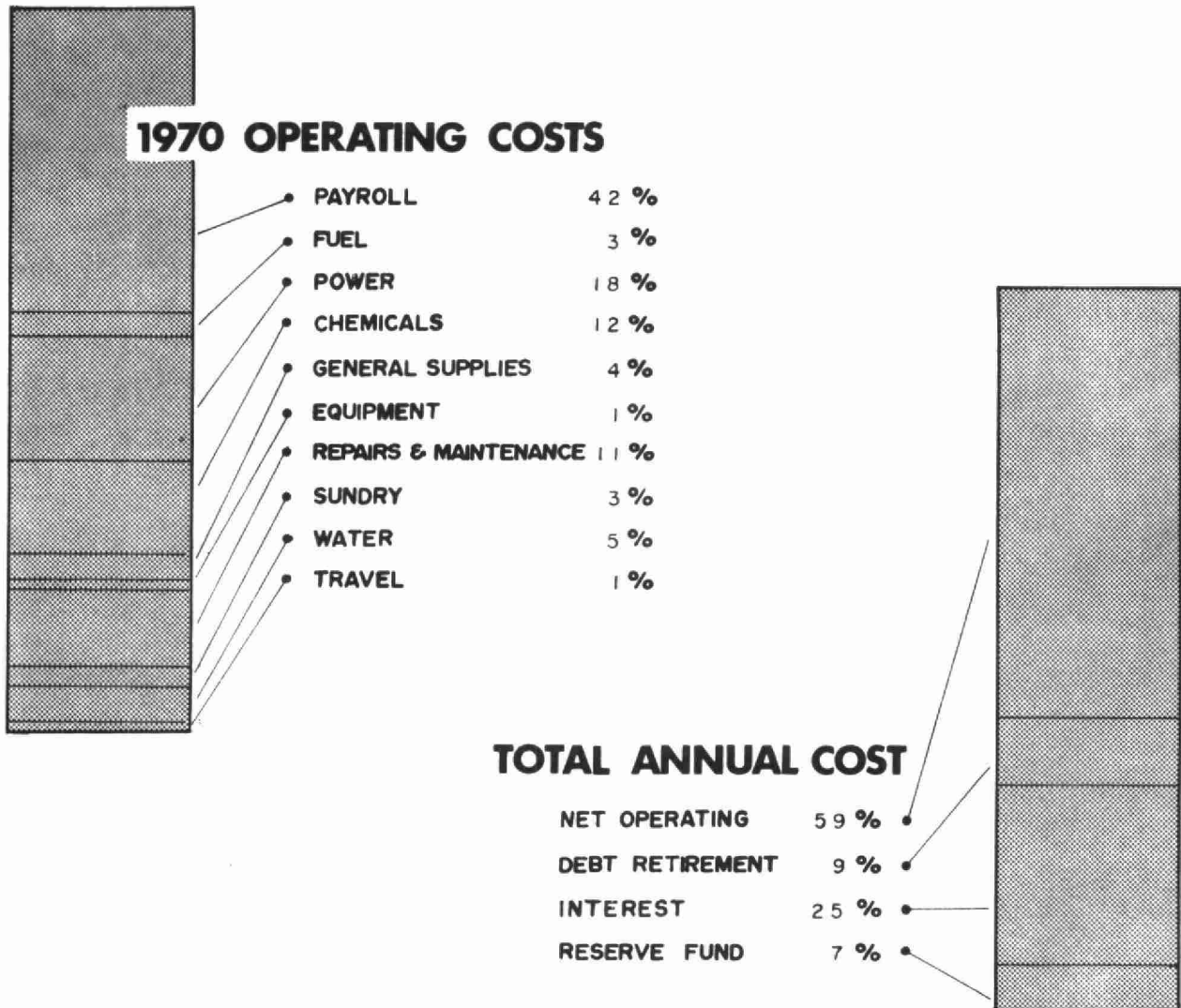
The project was well operated and maintained and provided good primary treatment at a reasonable cost.

PROJECT COSTS

NET CAPITAL COST (Final)	\$839,913.73
DEDUCT - Portion financed by CMHC/MDLB (Final)	<u>549,696.21</u>
Long Term Debt to OWRC	<u>\$290,217.52</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1970	\$ <u>36,581.23</u>
Net Operating	\$ 37,883.25
Debt Retirement	5,872.00
Reserve	4,384.16
Interest Charged	<u>16,231.78</u>
TOTAL	\$ <u>64,371.19</u>

RESERVE ACCOUNT

Balance @ January 1, 1970	\$ 19,592.47
Deposited by Municipality	4,384.16
Interest Earned	<u>1,373.61</u>
	\$ 25,350.24
Less Expenditures	<u>-</u>
Balance @ December 31, 1970	\$ <u>25,350.24</u>



Yearly Operating Costs

YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER MILLION GAL	COST PER LB OF BOD REMOVED
1966	231.646	\$25,281.98	\$109.14	23 cents
1967	234.338	29,843.67	127.35	24 cents
1968	198.76	32,277.42	162.39	28 cents
1969	260.7	33,021.33	126.66	29 cents
1970	240.90	37,883.25	157.20	21 cents

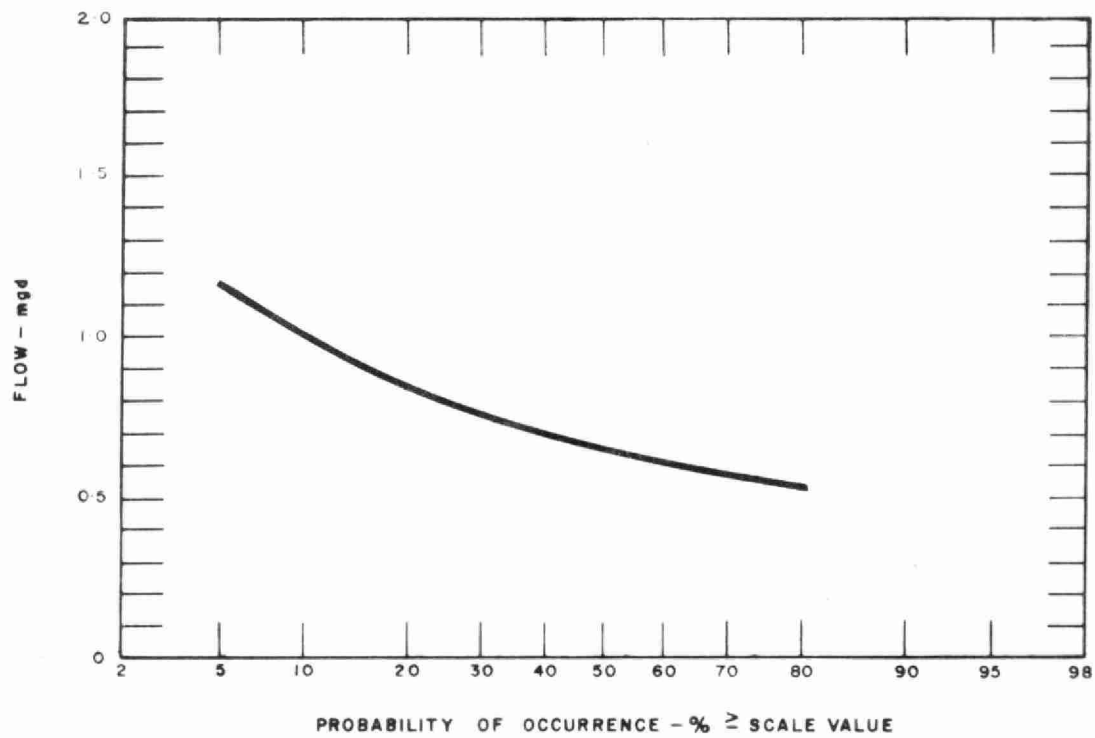
MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY *	WATER	TRAVEL
JAN	2591.06	1613.63	-	-	209.58	477.23	43.42	25.28	-	12.54	137.38	-
FEB	2528.32	1142.63	-	269.27	494.20	-	232.58	103.95	101.81	14.80	169.08	-
MAR	1961.62	1214.50	-	-	415.45	-	110.17	-	74.46	13.64	133.40	-
APR	3124.43	1182.31	-	265.50	972.04	375.64	92.50	57.80	12.98	19.92	145.74	-
MAY	2443.21	1274.76	-	265.50	238.85	-	121.74	-	366.88	18.31	135.98	21.19
JUNE	2519.92	1188.21	-	-	613.52	-	210.51	294.30		64.12	149.26	-
JULY	3385.55	1184.69	335.58	-	969.49	-	164.71	-	465.24	18.00	146.79	101.05
AUG	3752.56	1831.39	145.02	-	172.13	784.60	97.33	-	461.25	126.96	133.88	-
SEPT	3380.33	1265.56	-	-	575.49	377.77	281.02	-	167.92	556.66	155.91	-
OCT	3061.73	1158.56	-	-	534.16	956.82	57.59	-	105.37	37.93	137.36	73.94
NOV	2627.56	1301.31	-	265.50	544.25	-	110.65	78.47	152.90	36.42	138.06	-
DEC	6578.96	1106.25	-	-	976.13	1606.98	181.04	-	2169.90	232.22	194.74	111.70
TOTAL	37883.25	15463.80	480.60	1065.77	6715.29	4579.04	1703.26	559.80	4078.71	1151.52	1777.58	307.88

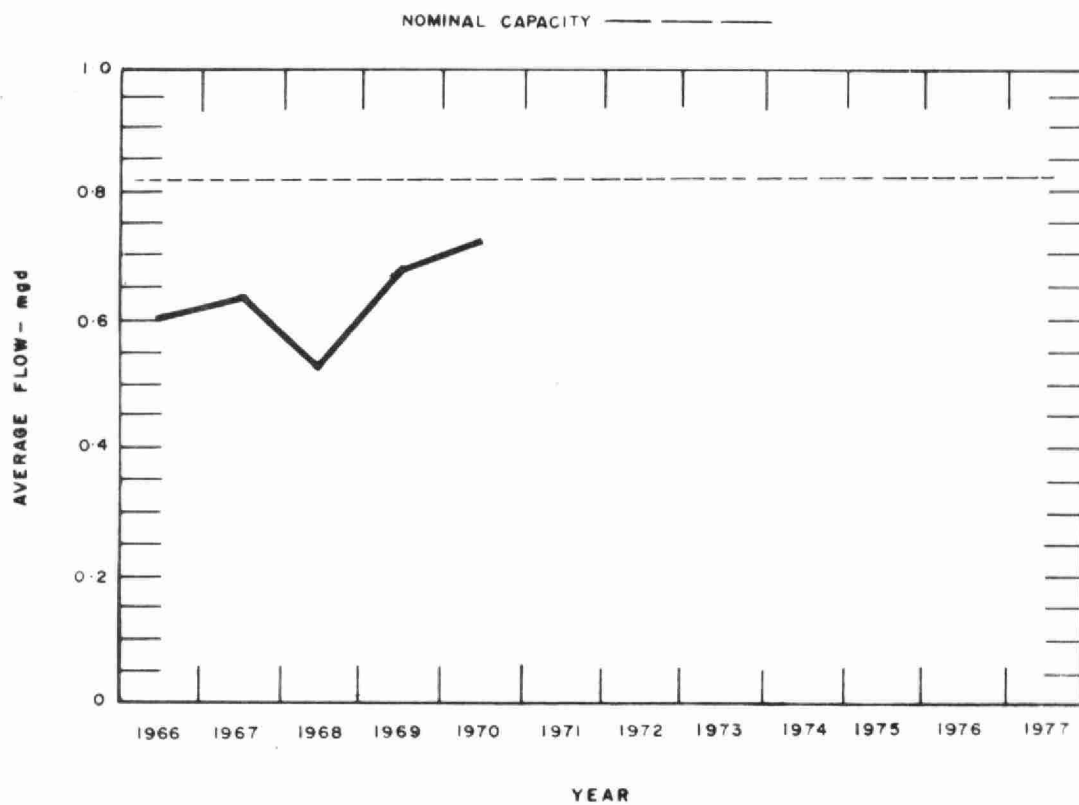
BRACKETS INDICATE CREDIT

* SUNDRY INCLUDES SLUDGE HAULAGE COSTS WHICH WERE

PROCESS DATA



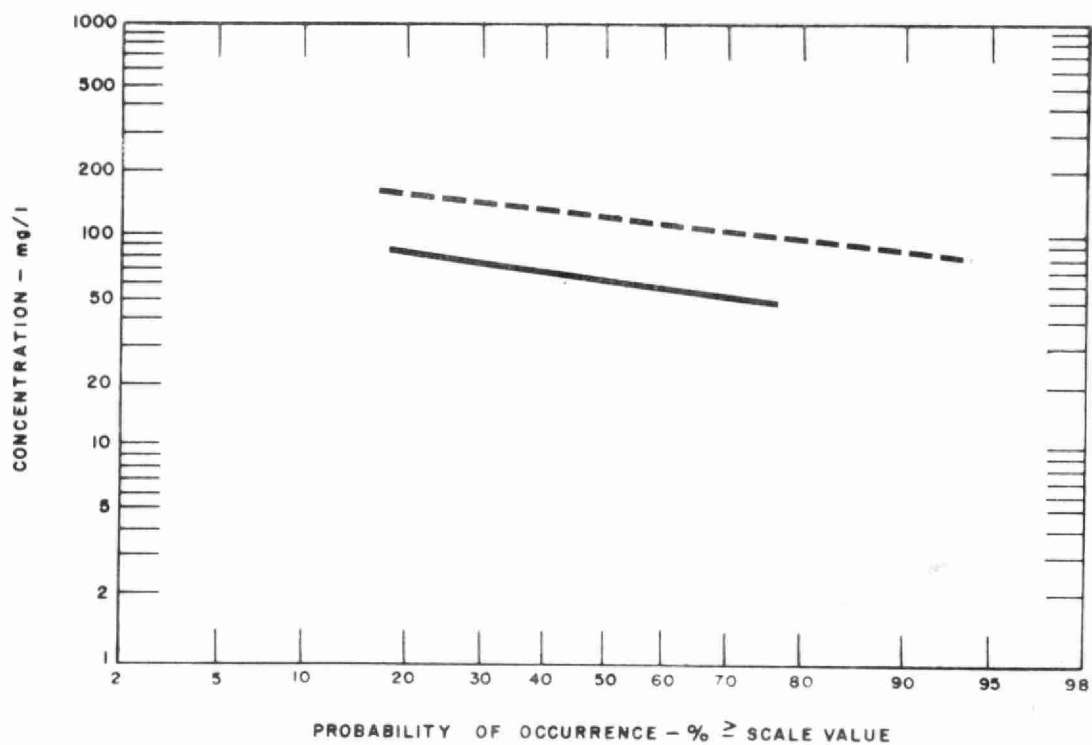
FLAWS



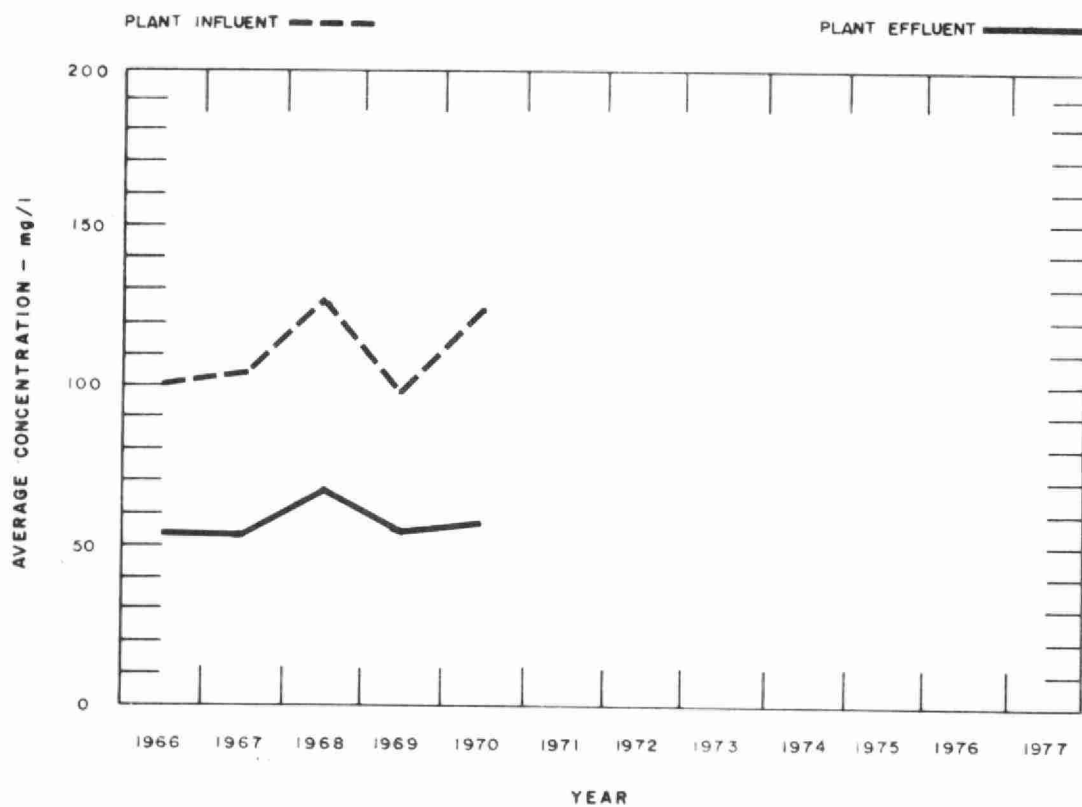
PLANT FLOWS and CHLORINATION

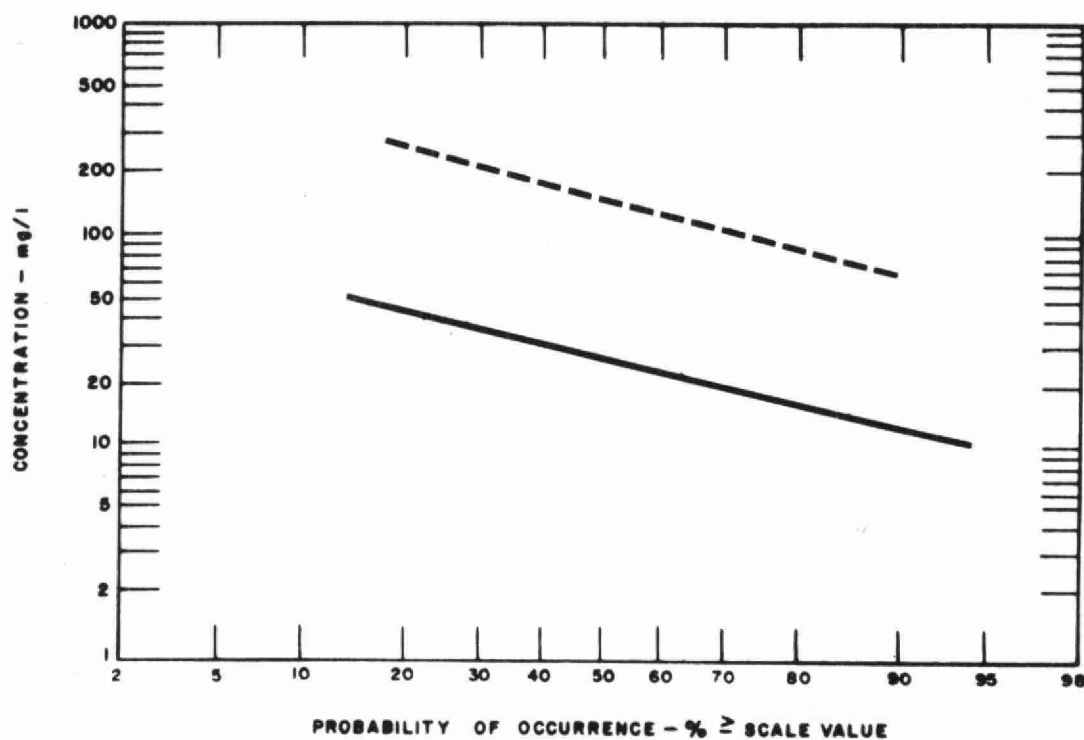
MONTH	TOTAL FLOW mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM DAILY FLOW mil gal	MINIMUM DAILY FLOW mil gal	CHLORINE USED 10 ³ pounds	DOSAGE mg/l
JAN	10.0 *	.59	1.0	.5	1.76	9.6
FEB	13.3	.47	.6	.4	1.59	11.9
MAR	29.3	.95	1.5	.5	1.76	6.0
APR	29.8	.99	2.2	.8	1.70	5.7
MAY	25.2	.81	1.2	.7	1.74	6.9
JUNE	19.5	.65	.9	.5	1.72	8.8
JULY	25.0	.81	1.2	.5	1.77	7.1
AUG	21.0	.68	1.2	.6	1.77	8.4
SEPT	21.0	.70	1.2	.4	1.72	8.2
OCT	19.6	.63	1.2	.4	1.76	9.0
NOV	18.7	.62	.9	.5	1.70	9.0
DEC	20.0	.65	.9	.5	1.75	8.7
TOTAL	252.4	-	-	-	20.74	-
AVERAGE	-	.71	-	-	1.73	8.2

* 17 days flow only

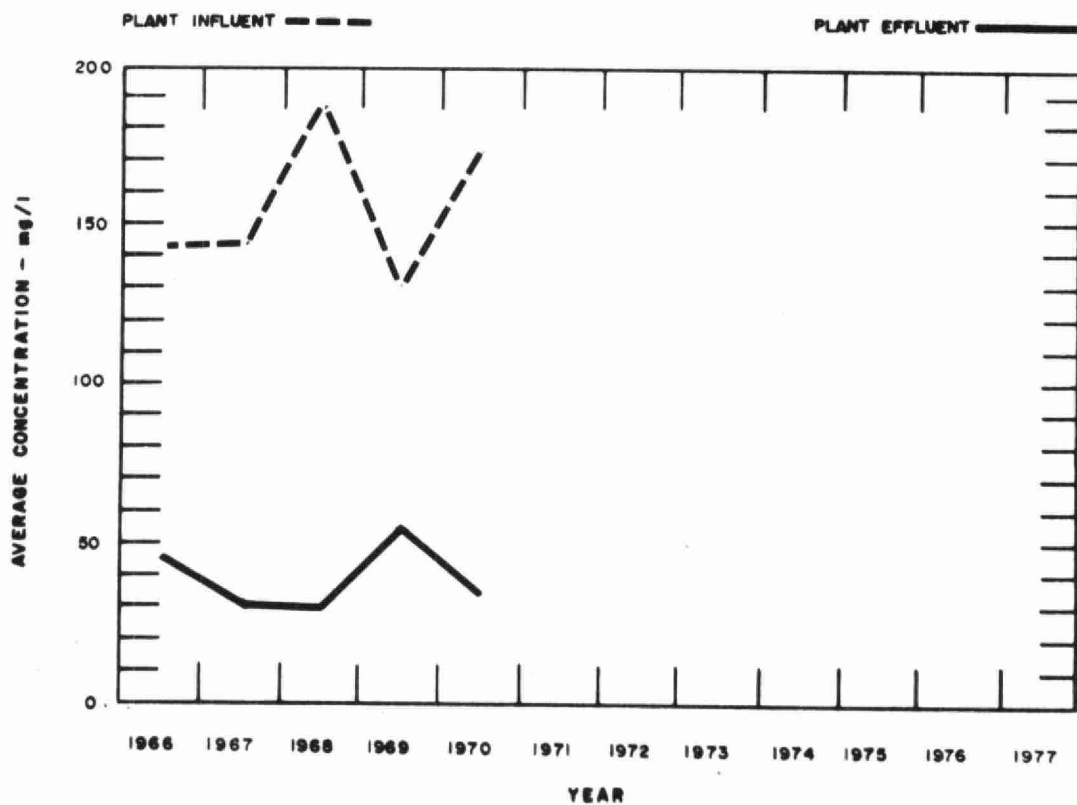


BIOCHEMICAL OXYGEN DEMAND





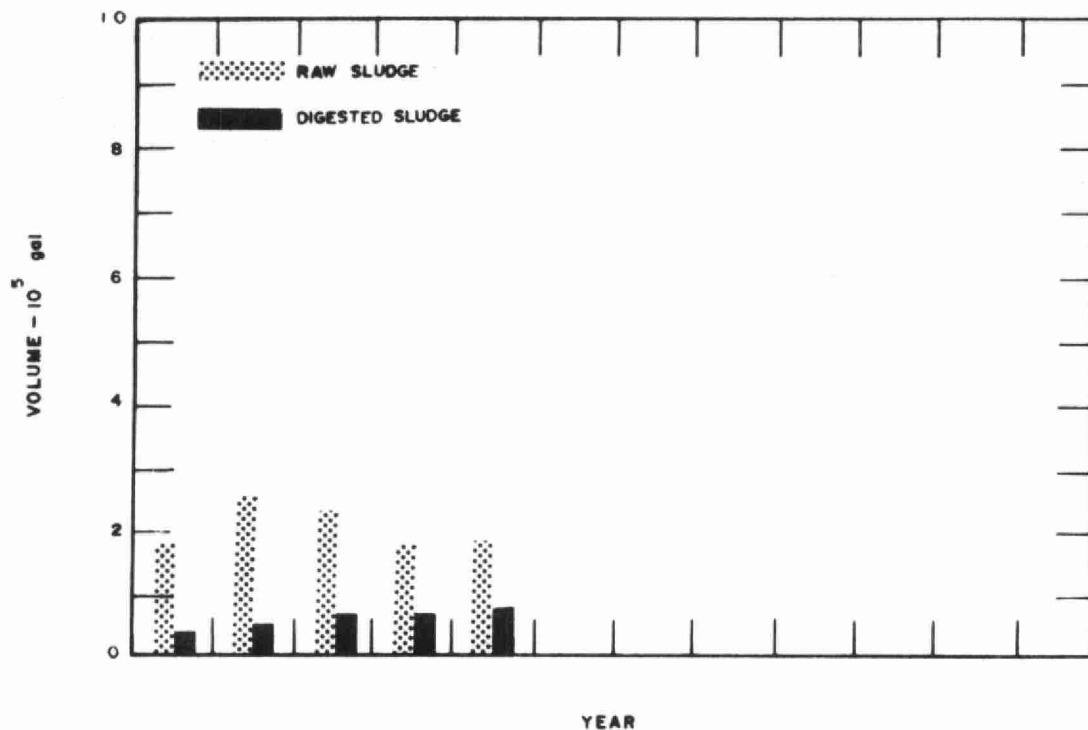
SUSPENDED SOLIDS



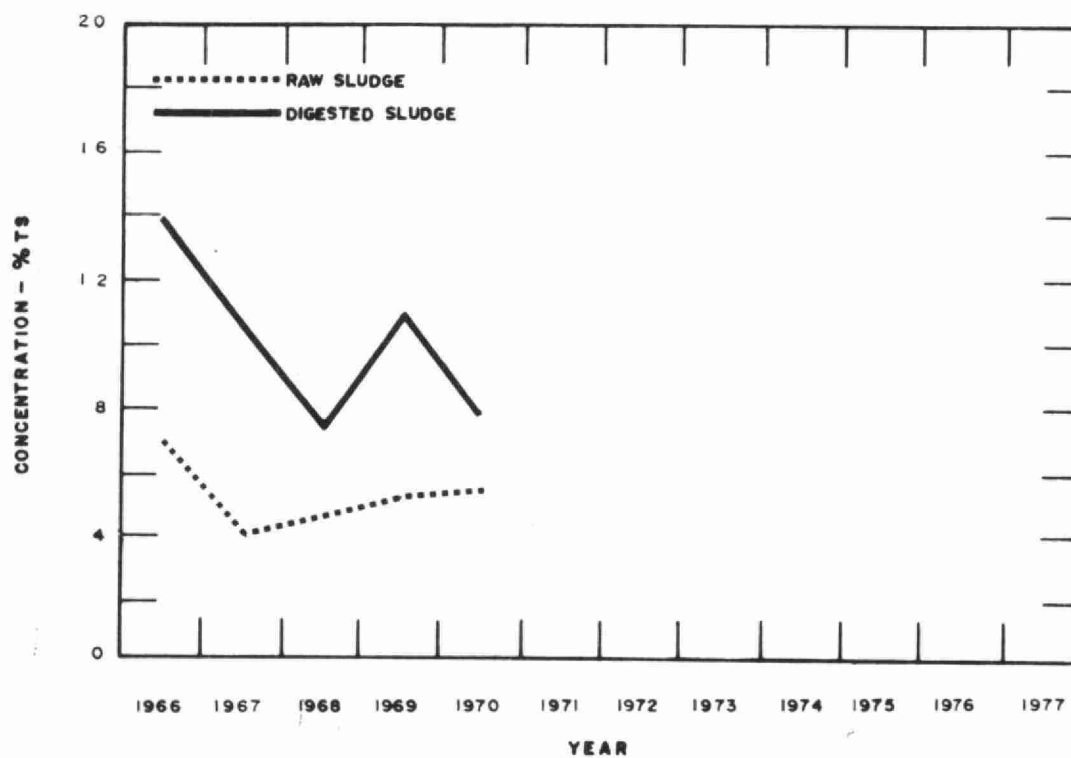
PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND						SUSPENDED SOLIDS						GRIT REMOVED cu ft
	INFLUENT		EFFLUENT		REDUCTION		INFLUENT		EFFLUENT		REDUCTION		
	n	mg/l	n	mg/l	%	10 ³ pounds	n	mg/l	n	mg/l	%	10 ³ pounds	
JAN	2	120	2	80	33	4.0	2	102	2	30	71	7.2	12
FEB	1	120	1	70	42	6.7	1	105	1	25	76	10.7	14
MAR	2	115	1	65	43	14.7	2	280	2	42	85	70.0	80
APR	2	192	2	43	76	44.4	2	370	2	20	95	104.2	123
MAY	1	100	1	44	56	14.1	1	95	1	10	89	21.4	71
JUNE	2	130	2	55	58	14.6	2	132	2	23	82	21.2	66
JULY	2	95	2	51	46	2.0	2	120	2	87	28	8.2	240
AUG	2	102	2	40	61	13.0	2	130	2	40	69	18.9	119
SEPT	1	100	1	50	50	10.4	1	210	1	15	93	40.9	86
OCT	1	120	1	55	54	12.7	1	160	1	25	84	26.4	102
NOV	2	122	2	55	55	12.5	2	210	2	25	88	34.6	28
DEC	1	170	1	95	44	32.1	1	180	1	35	81	29.0	38
TOTAL	19	-	18	-	-	-	19	-	19	-	-	-	979
AVERAGE	-	124	-	57	55	15.1	-	173	-	34	80	32.7	

NOTE - n is the number of samples taken



DIGESTION



SLUDGE DIGESTION and DISPOSAL

MONTH	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		SLUDGE DISPOSAL	
	VOLUME	TOTAL SOLIDS	VOL SOLIDS	VOLUME	TOTAL SOLIDS	VOL SOLIDS	VOLUME	TOTAL SOLIDS	DEWATERED	LIQUID
	10 ³ gal	%	%	10 ³ gal	%	%	10 gal	%	cu yd	cu yd
JAN	14.2	6.0	58	8.0	6.7	42	-	.5	-	-
FEB	12.8	3.7	68	4.0	8.2	44	-	.3	-	-
MAR	14.2	8.4	53	4.0	6.5	48	-	.3	-	-
APR	17.0	5.8	54	8.0	5.6	46	-	.4	-	4.8
MAY	19.0	3.7	61	4.0	3.9	49	-	.4	-	41.8
JUNE	16.8	4.8	59	13.0	11.1	35	-	.4	-	4.8
JULY	16.4	4.9	54	7.5	13.1	34	-	.4	-	3.2
AUG	16.4	6.6	54	8.0	8.7	37	-	1.1	-	6.6
SEPT	15.8	3.6	64	4.0	9.2	38	-	.3	-	-
OCT	17.0	6.8	48	8.0	11.5	35	-	.3	-	-
NOV	17.5	5.1	56	8.0	8.5	44	-	1.6	-	9.7
DEC	17.7	6.4	54	5.0	3.1	51	-	.3	-	-
TOTAL	194.8	-	-	81.5	-	-	-	-	-	70.9
AVERAGE	16.2	5.4	56	6.8	8.0	42	-	.5	-	-



Date Due

[illegible]

LABORATORY LIBRARY
ONTARIO WATER RESOURCES COMMISSION



Water management in Ontario